Office Action Summary	Application No.	Applicant(s)	
	10/586,047	YOSHIMURA, TAKEKI	
	Examiner	Art Unit	
	HUY-TRAM NGUYEN	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 July 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,8,9,11 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,8,9 and 11* is/are rejected.

7)☒ Claim(s) *2 and 12* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *July 14, 2009*.
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *See Continuation Sheet*.

Continuation of Attachment(s) 6). Other: proposed amendment dated July 13, 2009.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Remarks, filed on July 17, 2009, with respect to the rejection(s) of claim(s) 1, 2, 8, 9, 11 and 12 under 103 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **Yoshimura (JP 2003-096469) in view of Costa et al. (US Patent No. 3,739,710) and Oota et al. (JP-07-268353)**.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Yoshimura (JP 2003-096469) in view of Costa et al. (US Patent No. 3,739,710) and Oota et al. (JP-07-268353)**.

Regarding Claim 1, Yoshimura reference discloses an oil reconversion device for waste plastics which performs thermal cracking by heating a waste plastic and converting the generated cracker gas into oil by cooling **(Abstract)**, the oil reconversion device comprising:

a thermal cracking bath **(Drawing 1, numeral 5)** which has a bath main body placed inside a coil **(Drawing 1, numeral 6)**, the thermal cracking bath being adapted to induction-heat the bath main body by feeding a high-frequency current through the coil **(Abstract and Paragraph [0006])**, and to thermally crack at least a molten plastic obtained from the waste plastic to generate a cracker gas **(Paragraph [0006] – cracked gas G)**,

an injection port through which the waste plastic is injected **(Drawing 1 and 3, numeral 28)**,

a feeder which supplies the waste plastic injected through the injection port to the thermal cracking bath via a forced or direct feeding means without a bath **(Drawing 3, numeral 72)**, and

an oil conversion processor which cools and converts the cracker gas generated by the thermal cracking bath into oil **(Drawing 1, numeral 36 – capacitor unit and Paragraph [0022] – fuel oil).**

However, Yoshimura reference does not disclose an agitating mechanism having an agitate-scraping unit located inside the thermal cracking bath being adapted to agitate a molten plastic contained in the bath main body, and to scrape the molten plastic adhering to the inner wall of the bath main body, the agitate-scraping unit including a heater capable of heating a top surface of the molten plastic contained in the bath main body and the feeder being equipped with an extruder having a heating cylinder and an extruding screw which melts and extrudes the waste plastic injected into the injection port.

Costa et al. reference discloses similar agitating scraping unit inside a kettle for heating the products within a kettle by heat transfer from the inside agitator **(Abstract)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the agitating unit including a heater as taught by Costa et al., since Costa et al. reference states at **Column 1, Line 47-Column 2, Line 49** that such

a modification would provide improved heat transfer between heating source and the product being processed.

Oota et al. reference discloses a similar system having a feeder being equipped with a melting extrusion machine for mixing and melting the waste plastic **(Drawing 1 and Paragraph [0010] – the extrusion machine (2) inherently comprising a heater for melting and a screw for moving the melts).** It would have been obvious to one having ordinary skill in the art at the time the invention was made to use an extruding machine having a heater and a screw to dissolve the waste plastic in place of the dissolution vessel of Yoshimura since the equivalence for their use in the relevant art would be within the level of ordinary skill in the art.

1. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Yoshimura (JP 2003-096469) in view of Costa et al. (US Patent No. 3,739,710), Oota et al. (JP-07-268353), and Jiang (US 2002/0156332 A1).**

Regarding Claim 8, Yoshimura, Costa et al. and Oota et al. references disclose the oil reconversion device for waste plastics described in claim 1 further comprising a residue processor which collects and heats residue plastic generated inside the bath main body **(Yoshimura - Drawing 1, numeral 32 – residue treating part).** However, Yoshimura does not teach that the residue treating part is used to heat and supply a generated cracker gas to the oil conversion processor. Jiang reference discloses a system for converting waste plastics into hydrocarbon oil in a continuous processing step **(Figure 1)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to further heat and thermally crack the residue to generate

additional cracking gas and send the cracking gas to the oil conversion processor for producing the fuel oil **(Jiang - Page 1, Paragraph [0008]).**

2. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yoshimura (JP 2003-096469) in view of Costa et al. (US Patent No. 3,739,710), Oota et al. (JP-07-268353), and Sugiyama (JP 2002-309270).**

Regarding Claims 9 and 11, Yoshimura, Costa et al. and Oota et al. references disclose the oil reconversion device for waste plastics described in claims 1 and 8 respectively except for an off-gas processor having a burn processor which burns an off-gas generated in the processes of sequentially processing the waste plastic at a specified temperature or higher. Sugiyama reference discloses the burner for burning off the off gas generated in the process **(Paragraph [0017])**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thermal cracking device of Yoshimura with the burner of Sugiyama since it was known in the art to burn off the off gas from the thermal cracking process of waste plastics to produce harmless gas which is environment friendly.

Allowable Subject Matter

3. Claims 2 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding Claim 2, Yoshimura, Costa et al. and Oota et al. references disclose the oil reconversion device for waste plastics described in claim 1 except for the agitate-

scraping unit includes a blade which extends radially from a rotating shaft and which makes contact with an inner wall of the bath main body, and wherein **the heater extends radially from the rotating shaft at a position higher than the blade**. No prior art can be found for an agitate-scraping unit with the claimed heater.

Regarding Claim 12, Yoshimura, Costa et al. and Oota et al. references disclose the oil reconversion device for waste plastics described in claim 1 except for the blade includes a pair of blades extending orthogonally to the rotating shaft at an angle of 180° with respect to each other, wherein **each of the blades is provided with a stack of multiple plates extending radially outward from an end** thereof, **at least one of the multiple plates of each blade making contact with the inner wall in a bent state**. No prior art can be found for an agitate-scraping unit with the claimed heater.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY-TRAM NGUYEN whose telephone number is (571)270-3167. The examiner can normally be reached on MON- THURS: 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HTN
10/7/09

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797